



TenCate's design tool gives an animated view of what is happening 'inside' the fibre while it is exposed to force.

# MAKING THE DIFFERENCE

TenCate Grass explains why selecting the right materials makes all the difference.

TenCate Grass presented its views on latest developments in the synthetic turf industry at the Grass Yarns & Tufters Forum held in Barcelona recently. Frans Harmeling, Product & Development Director of the TenCate Grass Group, expressed the company's insight into the expectations of the industry held by the marketplace and discussed the solutions that TenCate provides.

Frans stated: "We see a growing demand in the marketplace for long term performance and a guarantee of this. There are also a growing number of small fields with their related wear and tear problems. In addition, there will be

increasing numbers of natural grass pitches being replaced if we're able to reduce the cost of installation and maintenance effectively."

## Performance

But what is meant by performance? One answer could be 'optimal playing characteristics and endless durability'. However ideal this may be, it is not a practical goal. Instead needs have to be balanced. For a typical community field or 5-a-side field, durability is more important than the playing characteristics. However, a premier league football club will go for optimal playing characteristics and reduced injuries to players. TenCate feel that with their new extrusion technology, the company are very close to achieving both, without having to make too many compromises along the road.

The performance of a field not only depends on the fibres but also on other system components and their interactions. This includes backing, infill, carpet and base construction, and last but not least, installation and maintenance (please see 'Relationship of system components' table below left).

## Fibres

Technical details such as microns, dtex, shape or a specific polymer grade do not in themselves determine the quality of the fibre. Rather, it is the technology and knowledge of how to combine them that is the determining factor. It is not difficult to make a fibre that is extremely durable. Usually, however, the durability is achieved at the expense of playability. The challenge therefore is to achieve both great durability as well as playability at the same time.

Frans advised: "We have a design tool that can enable us to see what is

Relationship of system components.

	Fiber	Infill	Shock pad
Shock Absorption (SAI)	SAI	SAI	SAI
Energy Restitution (ER)	ER	ER	ER
(Vertical) Deformation	Def.	Def.	
Rotational Inertia (grip)	Grip	Grip	
Ball roll	Roll		
Ball bounce (vertical)	Bounce		
Sliding friction	Sliding		

S P O R T S T U R F & A L L I E D P R O D U C T S



Fibres before (above) and after (below) Lisport test wear simulation of 12,200 cycles.



TenCate Tapeslide™ XP turf blades durability results: before (above) and after (right) Lisport wear simulation of 40,000 cycles.



happening 'inside' the fibre while it is exposed to force, this enables us to optimise and balance dimension, shape and raw materials for a specific fibre. This data is then used as input for our new extrusion technology."

### Evolution in Extrusion Technology

TenCate has developed new extrusion technologies that achieve both excellent durability and great playing characteristics. The company has created unique processes for making monofilament and tape yarns with extreme resistance to splitting, and the high resilience needed to secure long-term performance (see Lisport test wear simulation pictures above).

### TenCate Solutions

As a result of intensive research and development work, TenCate now has a number of effective solutions for the synthetic turf market, including:

**SMALL FIELDS — TENCATE TAPESLIDE™ XP:**

On small fields there are about four times more players per square metre than on a full-size field, not forgetting the often more intensive amount of playing hours these small fields get. For this scenario TenCate has developed the TenCate Tapeslide™ XP fibre, produced through a unique extrusion process. This fibre, even after being tested for more than 40,000

Lisport cycles, still does not show any damage to the fibre. This, coupled with the excellent tuft-lock properties, makes the fibre extremely suitable for intensively used fields, such as 5-a-side etc.

After countless numbers of tests, monitoring of developments in the grass yarn world and monitoring of existing installations over the last number of decades, TenCate is convinced that the TenCate Tapeslide™ XP turf blades are the only product in the world that enables limitless playing hours per day over an extended number of years on a ➤

TenCate Tapeslide™ XP turf blades installed in a "Cruyff Court".



## Tencate Monoslide™ Pro: Open Vs. Dense Construction

MONOSLIDE PRO, OPEN CONSTRUCTION	
yarn	17 000g
tuft gauge	304 tufts
stitch rate	17/10 cm
pile height	45 mm
face weight	1050 g/m <sup>2</sup>
infill	17 mm 1-Star Pro

RESULTS BEFORE AND AFTER WEAR SIMULATION BY LISPORT OF 12200 CYCLES		
open construction	before	after
ball roll	7,1 m	10,2 m
rotational friction	41 Nm	42,2 Nm



Infill splash.

MONOSLIDE PRO, DENS CONSTRUCTION	
yarn	12 000g
tuft gauge	304 tufts
stitch rate	17/10 cm
pile height	45 mm
face weight	1050 g/m <sup>2</sup>
infill	12 mm 1-Star Pro

RESULTS BEFORE AND AFTER WEAR SIMULATION BY LISPORT OF 12200 CYCLES		
dens construction	before	after
ball roll	11,2 m	12,9 m
rotational friction	31 Nm	38,5 Nm



Infill splash.

## MAKING THE DIFFERENCE

### FIFA\*\* requirements:

- Ball roll 4-8m (after 12 months: 4-10m)
- Rotational friction 30-45Nm

### FIFA\* requirements:

- Ball roll 4-10m
- Rotational friction 25-50Nm

small field, even using flat soled shoes. For this reason, TenCate has considerably increased the length of the warranty for TenCate Tapeslide™ XP turf blades up to twelve years.

### Turf Construction

The performance of a field is not only affected by the components used but also by the carpet construction. For comparison, TenCate tested two carpet constructions; an open and a dense construction. The tables above clearly show the differences in performance and in particular 'long-term performance'. The more densely tufted carpets perform better than the open constructions, and they also benefit from the encapsulation of infill, thereby reducing infill splash during play.

So it can be seen that dense constructions (i.e. more turf blades per square unit) provide better and more durable performance characteristics and meet the FIFA standards.

### Performance Warranty

The development of TenCate's new extrusion technology will enable the company to introduce a warranty on the performance of the system in the future. They are currently planning to implement new extrusion technology for a wider range of yarns and expect to be able to offer a minimum of a five-year performance warranty on their approved systems that feature yarns made with their new extrusion technology.

TenCate's intention (with the backing of selected partners) is to offer a financial warranty backed by a solid third party financial institution later this year. TenCate will offer a warrantee of up to five years for a FIFA RECOMMENDED 2 STAR performance of the total system, under the condition that top quality components will be used. The basis for this warranty is the new material and extrusion technology of TenCate that adds a new dimension of durability to resilient shaped yarns.

### Next Generation — New System Approach

Looking forward to the fourth generation synthetic turf systems coming up, TenCate is planning to install a revolutionary pilot field later this year. The aim of this new system approach is long term performance and even lower installation and maintenance cost, and most importantly encouraging a positive mindset in football players towards synthetic turf as compared to natural grass! TenCate is continuously striving to have their synthetic turf systems perfectly fit in with the athletes' needs.

Athletes will only be 100 per cent satisfied when synthetic turf out performs the best possible natural grass. Together with their strategic partners, TenCate is putting all of its efforts into making sure the industry's customers can rest assured that when they invest in synthetic turf systems they have a warranty that gives them the best possible playability for a long number of years. ★